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BIOGEOCHEMISTRY OF MOLYBDENUM

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This report was presented at the 1950 Annual Scientific Meeting of the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR.

The study of dispersed molybdenum in the biosphere and in living matter has permitted drawing a number of new conclusions. Molybdenum in very small quantities is widely and homogeneously distributed in rocks, water, and soils. Some plants concentrate it; this concentration is connected with the physiological function of molybdenum, i.e., participation in nitrogen fixation by the nodule bacteria of leguminous plants and in the nitrate reduction by higher plants. The chemical properties of molybdenum compounds and the chemical reactions and structure of the medium (soils and rocks) permit explanation of some characteristics of the biochemical history of molybdenum and its migration.

The work which has been started on the study of biogeochemical aspects of molybdenum shows that molybdenum insufficiency and the effect of that insufficiency on the growth of plants and the development of flora are noticeable only in the case of cultivated agricultural plants. It is probable that the so-called clover exhaustion is caused by molybdenum insufficiency.

In regions where deposits of molybdenum ores occur, there is an exceptionally high content of molybdenum in the soil and plants. As shown by an investigation of the molybdenum content of plant samples collected across the area of one of the ore deposits in Kazakhstan, this characteristic may serve as an aid in prospecting for molybdenum.

The physiological and biochemical interaction of molybdenum with other elements, which has now been established, makes the study of the biogeochemistry of this particular element both interesting and complicated.

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